REMARKS

This Amendment is in response to the Office Action mailed October 15, 2002. In the Office Action, claims 1, 8-9 and 13-15 were rejected under 35 U.S.C. §102(e) and claims 2-7 and 10-12 were rejected under 35 U.S.C. §103(a). Claims 1 and 13-15 have been cancelled without prejudice. Claim 6 has been placed into independent form with claims 2 and 3 now depending therefrom.

I. REJECTIONS UNDER 35 U.S.C. § 102(e)

Claim 1 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,272,634 issued to Tewfik. Since claim 1 has been cancelled without prejudice, Applicants respectfully request that the rejection be withdrawn.

Claims 8-9 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,960,081 issued to Vynne. Applicants respectfully traverse the rejection. As the Examiner is aware, in accordance with MPEP § 2131, a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. *See Verdegaal Bros. v. Union Oil Co. Of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Applicants respectfully submit that a prima facie case of anticipation has not been met because Vynne (Col. 2, lines 56-63; Page 3 of Office Action) describes *embedding* of the watermark, not *recovering* the watermark within the first frame through analysis of intensity differences between the first frame of the video sequence and a second frame of the video sequence as claimed. (Emphasis added).

Hence, Applicants respectfully request that the § 102(e) rejection of claims 8-9 be withdrawn.

Claims 13-15 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 5,905,800 issued to Moskowitz. While Applicants respectfully traverse the rejection, claims 13-15 have been cancelled without prejudice. As a result, further discussion to traverse the grounds for rejection is unnecessary at this time.. Withdrawal of the §102(e) rejection of claims 13-15 is respectfully requested.

II. REJECTION UNDER 35 U.S.C. § 103(a)

Claims 2-7 and 10-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Tewfik in view of U.S. Patent No. 5,768,426 issued to Rhoads. Applicant respectfully disagrees because neither Tewfik nor Rhoads, alone or in combination, describes or suggests producing a watermark based on a multiplicative result of a pseudo-random number sequence, an amplitude associated with a data block, a secondary data set as set forth in claim 6. Instead, Rhoads describes a batch encoding technique is not equivalent to a watermark. Based on the foregoing, Applicants respectfully request withdrawal of the §103(a) rejection.

Claims 10-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Vynne in view of U.S. Patent No. 5,949,885 issued to Leighton. Applicants respectfully traverse because neither Vynne nor Leighton, alone or in combination, describes or suggests recovering the watermark within the first frame through analysis of intensity differences between the first frame of the video sequence and a second frame of the video sequence as set forth in independent claim 8. Therefore, not only are dependent claims 10-12 allowable based on their dependency to claim 8, these claims are also allowable based on the subject matter claimed therein.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

Please replace the paragraph that begins on page 13, line 14 with the following paragraph:

Referring now to Figure 7, in accordance with another inventive aspect, a diagram of an illustrative embodiment of the operations of watermark encoder 150 of Figure 1, operating in a spatial domain and employed in server platform 110 of content distribution system 100 of Figure 1, is shown. Initially, a data set of a sequence is loaded into the watermark encoder (710). For clarity sake, herein, the data set is considered to be a frame of a video sequence as shown in Figure 8. Frame 800 includes a plurality of data blocks 810_1-810_N, where "N" varies depending on the selected size of data blocks 810_1-810_N (e.g., 8×8, 4×4 having a larger N value or another grouping of elements). However, it is contemplated that the data set may comprise other types of data, as described above, without departing from the spirit and scope of the invention.

IN THE CLAIMS

1. Cancelled.

2. (Amended) The method of claim 6[1] further comprising:
repeatedly performing arithmetic operations on signal values associated with different regions of the data set to produce a plurality of resultant signal values;
determining sign bits associated with the plurality of resultant signal values; and
providing the sign bits as the pseudo-random number sequence.

3. (Amended) The method of claim 6[1], wherein the generating of the pseudo-random number sequence comprises:

computing a mean signal value for a first region of the data set;

computing a mean signal value for a second region of the data set;

performing an arithmetic operation on the mean signal value of the first region and the mean signal value of the second region to produce a resultant signal value;

determining a sign bit of the resultant signal value; and

providing the sign bit as a portion of the pseudo-random number sequence.

4. The method of claim 3, wherein the performing of the arithmetic operation includes computing a difference between the mean signal value of the first region and the mean signal value of the second region.

5. The method of claim 4, wherein each region of the data set includes a predefined image within the frame.

6. (Amended) A[The] method [of claim 1, wherein the producing of the watermark includes] for improving detection of a watermark, comprising:

generating a pseudo-random sequence of numbers based on data associated with a data set;

producing the watermark by (i) computing a data block having an amplitude [for the watermark],[;] (ii) computing a secondary data set, each pixel of the secondary data set having a predetermined signal value,[;] and (iii) multiplying the pseudo-random number sequence, the amplitude and the secondary data set to produce a result operating as the watermark; and

embedding the watermark into the data set.

7. The method of claim 6, wherein the amplitude for the watermark is computed through adjustment of a plurality of parameters including frame differences.

8. A method for extracting a watermark from a video sequence, comprising:

receiving the video sequence having a first frame embedded with a watermark; and

recovering the watermark within the first frame through analysis of intensity differences between the first frame of the video sequence and a second frame of the video sequence.

9. The method of claim 8, wherein prior to recovering the watermark, the method further comprises:

computing a pseudo-random number sequence using the random number generator seed.

10. The method of claim 9, wherein the recovering of the watermark includes:

computing a sum for products of (i) differences between watermarked intensities of the first frame and the second frame of the video sequence and (ii) corresponding elements of the pseudo-random number sequence.

11. The method of claim 10, wherein the recovering of the watermark further includes:

computing a products of (i) a mean value for the differences between watermarked intensities of the first frame and the second frame of the video sequence and (ii) a sum of the pseudo-random number sequence.

12. The method of claim 11, wherein the recovering of the watermark further includes:

subtracting (i) the product of the mean value for the differences between watermarked intensities of the first frame and the second frame of the video sequence and the sum of the pseudo-random number sequence from (ii) the sum of products of the differences between watermarked intensities of the first frame and the second frame of the video sequence and the corresponding elements of the pseudo-random number sequence.

13. Cancelled.

14. Cancelled.

15. Cancelled.

CONCLUSION

In view of the amendments and remarks made above, it is respectfully submitted that all pending claims are in condition for allowance, and such action is respectfully solicited.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on: January 15, 2003.

Corrinn R. Reynolds — *Date* 1/15/03